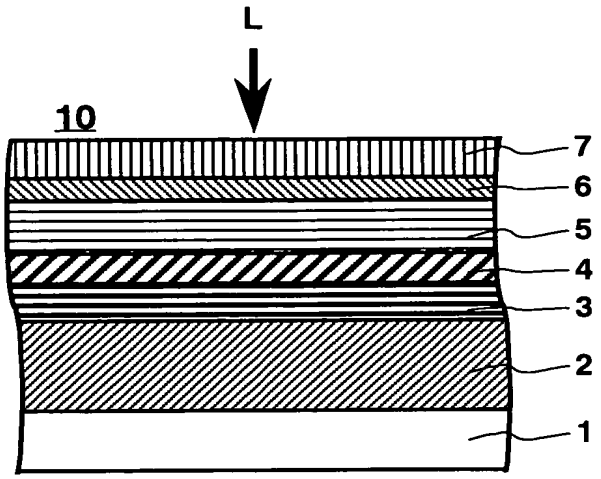

Fig. 1

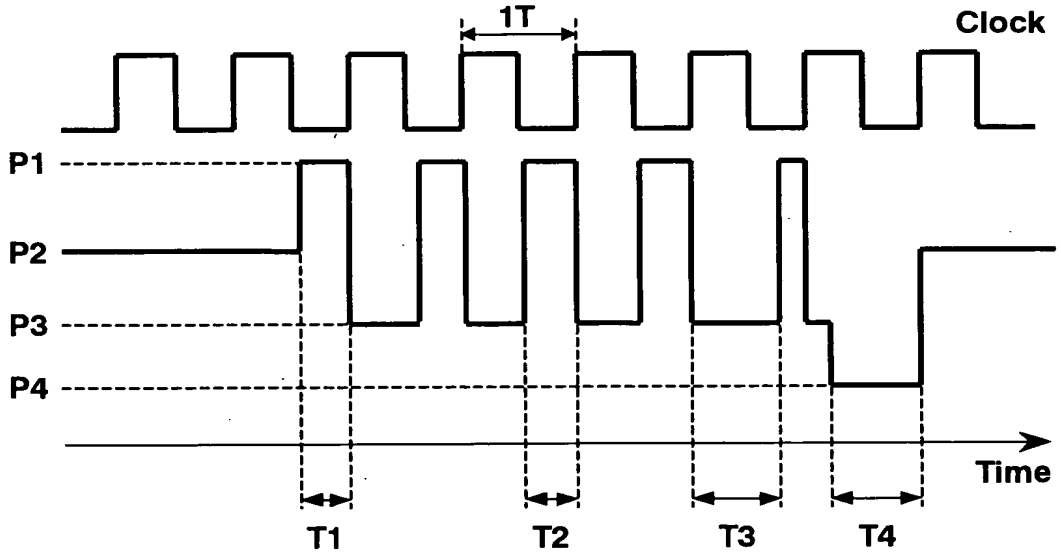

Fig. 2

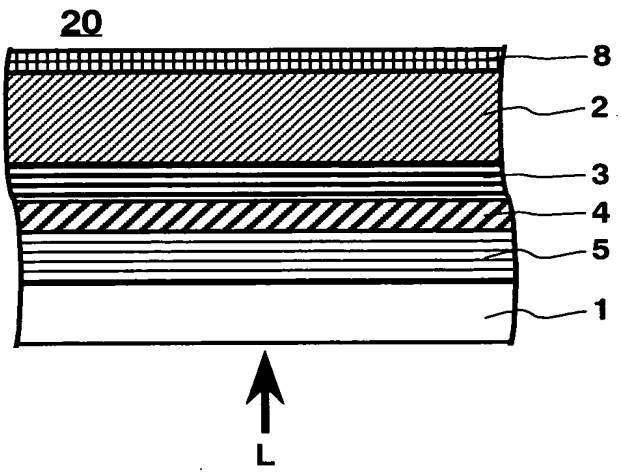

Fig. 3

Sample No.	Ge [%].	Sb [%].	Te [%].	Sb/Te.	Deteriorated reproduction less than 0.2 dB	Jitter less than 9%
1	2.3	74.1	23.6	3.1		
2	3.4	72.9	23.7	3.1	Yes	Yes
3	4.2	63.2	32.6	1.9		Yes
4	4.3	65.1	30.6	2.1	Yes	Yes
5	4.5	67.8	27.7	2.4	Yes	Yes
6	4.5	78.2	17.3	4.5		Yes
7	4.6	76.2	19.2	4.0	Yes	Yes
8	4.8	71.9	23.3	3.1	Yes	Yes
9	6.2	69.2	24.6	2.8	Yes	Yes
10	6.4	70.6	23.0	3.1	Yes	Yes
11	6.5	70.2	23.3	3.0	Yes	Yes
12	7.2	75.4	17.4	4.3	Yes	
13	7.8	60.2	32.0	1.9	Yes	
14	8.5	72.1	19.4	3.7	Yes	Yes
15	8.7	69.7	21.6	3.2	Yes	Yes
16	11.1	69.2	19.7	3.5	Yes	Yes
17	14.5	65.3	20.2	3.2	Yes	Yes
18	15.8	66.5	17.7	3.8	Yes	

Fig. 4

Sample No.	Recording power [mW]				Strategy [T]			
	P1	P2	P3	P4	T1	T2	T3	T4
2	5.2	2.7	0.1	0.1	0.4	0.4	0.7	0.7
4	5.2	2.7	0.1	0.1	0.4	0.4	0.7	0.7
7	5.2	3.4	0.1	0.1	0.5	0.5	0.8	0.8
17	5.2	2.7	0.1	0.1	0.4	0.4	0.7	0.7

Fig. 5

	Reproduction power 0.3 [mW]		Reproduction power 0.38 [mW]	
	C/N [dB]		C/N [dB]	
Sample No.	Immediately after	5 minutes after	Immediately after	5 minutes after
2-v11 to 2-v14 & 2-v51 to 2-v54	50.2	50.2	51.1	51.1
4-v11 to 4-v14 & 4-v51 to 4-v54	50.1	50.1	51.1	51.1
7-v11 to 7-v14 & 7-v51 to 7-v54	50.2	50.2	51.2	51.2
17-v11 to 17-v14 & 17-v51 to 17-v54	50.2	50.2	51.3	51.3

Fig. 6

	Sample No.							
	2	2-v1	2-v2	2-v3	2-v4	2-v5	2-v6	2-v7
Ge [%]	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Sb [%]	72.9	72.7	72.3	71.5	70.8	70.0	69.3	68.5
Te [%]	23.7	23.4	23.3	23.1	22.8	22.6	22.3	22.1
Ti [%]	0.0	0.5	1.0	2.0	3.0	4.0	5.0	6.0
Sb/Te	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Durable reproduction power [mW]	0.34	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Average initial jitter [%]	7.95	6.98	6.89	6.97	7.11	7.58	8.87	9.92

Fig. 7

	Sample No.											
	2-v1	2-v11	2-v12	2-v13	2-v14	2-v15	2-v5	2-v51	2-v52	2-v53	2-v54	2-v55
Ge [%]	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Sb [%]	72.7	72.3	71.9	71.1	70.4	69.6	70.0	69.6	69.3	68.5	67.7	67.0
Te [%]	23.4	23.3	23.2	23.0	22.7	22.5	22.6	22.5	22.3	22.1	21.9	21.6
Ti [%]	0.5	0.5	0.5	0.5	0.5	0.5	4.0	4.0	4.0	4.0	4.0	4.0
In [%]	0.0	0.5	1.0	2.0	3.0	4.0	0.0	0.5	1.0	2.0	3.0	4.0
Sb/Te	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Average initial jitter [%]	6.98	6.91	6.83	6.86	6.89	7.02	7.58	7.48	7.34	7.35	7.41	7.66
Jitter after second time recording [%]	8.05	7.11	7.04	7.08	7.17	7.21	8.74	7.69	7.54	7.49	7.57	7.94
Rise of jitter [%]	1.07	0.20	0.21	0.22	0.28	0.19	1.16	0.21	0.20	0.14	0.16	0.28
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.33	0.38	0.38	0.38	0.38	0.38	0.33
Judgement		Y	Y	Y	Y	N		Y	Y	Y	Y	N

Fig. 8

	Sample No.		
	2	2 – v1	2 – v11
Ge [%]	3.4	3.4	3.4
Sb [%]	72.9	72.7	72.3
Te [%]	23.7	23.4	23.3
Ti [%]	0.0	0.5	0.5
In [%]	0.0	0.0	0.5
Average initial jitter [%]	7.95	6.98	6.91
Jitter after second time recording [%]	9.02	8.02	7.11
Rise of jitter [%]	1.07	1.04	0.20
Durable reproduction power [mW]	0.34	0.38	0.38

Fig. 9

720

	Sample No.							
	4	4 – v1	4 – v2	4 – v3	4 – v4	4 – v5	4 – v6	4 – v7
Ge [%]	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Sb [%]	65.1	64.5	64.2	63.5	62.8	62.1	61.4	60.8
Te [%]	30.6	30.7	30.5	30.2	29.9	29.6	29.3	28.9
Ti [%]	0.0	0.5	1.0	2.0	3.0	4.0	5.0	6.0
Sb/Te	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Durable reproduction power [mW]	0.34	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Average initial jitter [%]	8.52	7.48	7.14	7.08	7.22	7.76	9.04	10.12

Fig. 10

	Sample No.											
	4-v1	4-v11	4-v12	4-v13	4-v14	4-v15	4-v5	4-v51	4-v52	4-v53	4-v54	4-v55
Ge [%]	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Sb [%]	64.5	64.2	63.8	63.1	62.5	61.8	62.1	61.8	61.4	60.8	60.1	59.4
Te [%]	30.7	30.5	30.4	30.1	29.7	29.4	29.6	29.4	29.3	28.9	28.6	28.3
Ti [%]	0.5	0.5	0.5	0.5	0.5	0.5	4.0	4.0	4.0	4.0	4.0	4.0
In [%]	0.0	0.5	1.0	2.0	3.0	4.0	0.0	0.5	1.0	2.0	3.0	4.0
Sb/Te	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Average initial jitter [%]	7.48	7.45	7.44	7.46	7.45	7.62	7.76	7.68	7.72	7.7	7.74	7.91
Jitter after second time recording [%]	8.62	7.67	7.61	7.64	7.62	7.88	8.83	7.91	7.98	7.92	7.95	8.19
Rise of jitter [%]	1.14	0.22	0.17	0.18	0.17	0.26	1.07	0.23	0.26	0.22	0.21	0.28
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.34	0.38	0.38	0.38	0.38	0.38	0.34
Judgement		Y	Y	Y	Y	N		Y	Y	Y	Y	N

Fig. 11

	Sample No.							
	7	7-v1	7-v2	7-v3	7-v4	7-v5	7-v6	7-v7
Ge [%]	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Sb [%]	76.2	75.9	75.5	74.7	73.9	73.1	72.3	71.5
Te [%]	19.2	19.0	18.9	18.7	18.5	18.3	18.1	17.9
Ti [%]	0.0	0.5	1.0	2.0	3.0	4.0	5.0	6.0
Sb/Te	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Durable reproduction power [mW]	0.34	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Average initial jitter [%]	8.28	7.42	7.02	6.82	6.98	7.36	8.51	9.63

Fig. 12

	Sample No.											
	7-v1	7-v11	7-v12	7-v13	7-v14	7-v15	7-v5	7-v51	7-v52	7-v53	7-v54	7-v55
Ge [%]	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Sb [%]	75.9	75.5	75.1	74.3	73.5	72.7	73.1	72.7	72.3	71.5	70.7	69.9
Te [%]	19.0	18.9	18.8	18.6	18.4	18.2	18.3	18.2	18.1	17.9	17.7	17.5
Ti [%]	0.5	0.5	0.5	0.5	0.5	0.5	4.0	4.0	4.0	4.0	4.0	4.0
In [%]	0.0	0.5	1.0	2.0	3.0	4.0	0.0	0.5	1.0	2.0	3.0	4.0
Sb/Te	4	4	4	4	4	4	4	4	4	4	4	4
Average initial jitter [%]	7.42	7.39	7.4	7.37	7.39	7.51	7.36	7.34	7.35	7.33	7.31	7.43
Jitter after second time recording [%]	8.46	7.63	7.62	7.58	7.61	7.78	8.45	7.62	7.61	7.51	7.54	7.71
Rise of jitter [%]	1.04	0.24	0.22	0.21	0.22	0.27	1.09	0.28	0.26	0.18	0.23	0.28
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.34	0.38	0.38	0.38	0.38	0.38	0.34
Judgement		Y	Y	Y	Y	N		Y	Y	Y	Y	N

Fig. 13

	Sample No.							
	17	17-v1	17-v2	17-v3	17-v4	17-v5	17-v6	17-v7
Ge [%]	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Sb [%]	65.3	64.8	64.4	63.6	62.9	62.1	61.3	60.6
Te [%]	20.2	20.2	20.1	19.9	19.6	19.4	19.2	18.9
Ti [%]	0.0	0.5	1.0	2.0	3.0	4.0	5.0	6.0
Sb/Te	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Durable reproduction power [mW]	0.36	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Average initial jitter [%]	8.02	7.14	7.05	7.02	7.16	7.28	8.55	9.78

Fig. 14

	Sample No.											
	17-v1	17-v11	17-v12	17-v13	17-v14	17-v15	17-v5	17-v51	17-v52	17-v53	17-v54	17-v55
Ge [%]	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Sb [%]	64.8	64.4	64.0	63.2	62.5	61.7	62.1	61.7	61.3	60.6	59.8	59.0
Te [%]	20.2	20.1	20.0	19.8	19.5	19.3	19.4	19.3	19.2	18.9	18.7	18.5
Ti [%]	0.5	0.5	0.5	0.5	0.5	0.5	4.0	4.0	4.0	4.0	4.0	4.0
In [%]	0.0	0.5	1.0	2.0	3.0	4.0	0.0	0.5	1.0	2.0	3.0	4.0
Sb/Te	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Average initial jitter [%]	7.14	7.09	7.12	7.10	7.14	7.18	7.28	7.25	7.26	7.24	7.27	7.39
Jitter after second time recording [%]	8.22	7.31	7.36	7.33	7.41	7.45	8.52	7.47	7.49	7.51	7.54	7.66
Rise of jitter [%]	1.08	0.22	0.24	0.23	0.27	0.27	1.24	0.22	0.23	0.27	0.27	0.27
Durable reproduction power [mW]	0.4	0.4	0.4	0.4	0.4	0.35	0.4	0.4	0.4	0.4	0.4	0.35
Judgement		Y	Y	Y	Y	N		Y	Y	Y	Y	N

Fig. 15

	Sample No.						
	2-v20	2-v21	2-v22	2-v23	2-v24	2-v25	2-v26
Ge [%]	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Sb [%]	72.9	72.6	72.4	72.1	71.3	70.5	69.8
Te [%]	23.4	23.4	23.4	23.2	23.0	22.8	22.5
Ti [%]	0.3	0.3	0.3	0.3	0.3	0.3	0.3
In [%]	0.0	0.3	0.5	1.0	2.0	3.0	4.0
Sb/Te	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Average initial jitter [%]	6.98	6.95	6.91	6.83	6.86	6.89	7.02
Jitter after second time recording [%]	8.05	7.16	7.11	7.04	7.08	7.17	7.21
Rise of jitter [%]	1.07	0.21	0.20	0.21	0.22	0.28	0.19
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.38	0.33
Judgement		Y	Y	Y	Y	Y	N

Fig. 16

	Sample No.						
	4-v20	4-v21	4-v22	4-v23	4-v24	4-v25	4-v26
Ge [%]	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Sb [%]	64.5	64.4	64.3	63.9	63.3	62.6	61.9
Te [%]	30.7	30.7	30.6	30.5	30.1	29.8	29.5
Ti [%]	0.3	0.3	0.3	0.3	0.3	0.3	0.3
In [%]	0.0	0.3	0.5	1.0	2.0	3.0	4.0
Sb/Te	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Average initial jitter [%]	7.48	7.46	7.45	7.44	7.46	7.45	7.62
Jitter after second time recording [%]	8.62	7.69	7.67	7.61	7.64	7.62	7.88
Rise of jitter [%]	1.14	0.23	0.22	0.17	0.18	0.17	0.26
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.38	0.34
Judgement		Y	Y	Y	Y	Y	N

Fig. 17

	Sample No.						
	7-v20	7-v21	7-v22	7-v23	7-v24	7-v25	7-v26
Ge [%]	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Sb [%]	75.9	75.8	75.7	75.3	74.5	73.7	72.9
Te [%]	19.0	19.0	18.9	18.8	18.6	18.4	18.2
Ti [%]	0.3	0.3	0.3	0.3	0.3	0.3	0.3
In [%]	0.0	0.3	0.5	1.0	2.0	3.0	4.0
Sb/Te	4	4	4	4	4	4	4
Average initial jitter [%]	7.42	7.4	7.39	7. 4	7.37	7.39	7.51
Jitter after second time recording [%]	8.46	7.63	7.63	7.62	7.58	7.61	7.78
Rise of jitter [%]	1.04	0.23	0.24	0.22	0.21	0.22	0.27
Durable reproduction power [mW]	0.38	0.38	0.38	0.38	0.38	0.38	0.34
Judgement		Y	Y	Y	Y	Y	N

Fig. 18

	Sample No.						
	17-v20	17-v21	17-v22	17-v23	17-v24	17-v25	17-v26
Ge [%]	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Sb [%]	65.0	64.7	64.5	64.2	63.4	62.6	61.9
Te [%]	20.2	20.2	20.2	20.0	19.8	19.6	19.3
Ti [%]	0.3	0.3	0.3	0.3	0.3	0.3	0.3
In [%]	0.0	0.3	0.5	1.0	2.0	3.0	4.0
Sb/Te	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Average initial jitter [%]	7.14	7.11	7.09	7.12	7.10	7.14	7.18
Jitter after second time recording [%]	8.22	7.34	7.31	7.36	7.33	7.41	7.45
Rise of jitter [%]	1.08	0.23	0.22	0.24	0.23	0.27	0.27
Durable reproduction power [mW]	0.4	0.4	0.4	0.4	0.4	0.4	0.35
Judgement		Y	Y	Y	Y	Y	N

Fig. 19

		Additive element		
	Sample No. 2-v11	Fe	Al	Si
Ge [%]	3.4	3.4	3.4	3.4
Sb [%]	72.3	71.5	71.5	71.5
Te [%]	23.3	23.1	23.1	23.1
Ti [%]	0.5	0.5	0.5	0.5
In [%]	0.5	0.5	0.5	0.5
Amount of additive element [%]	0.0	1	1	1
Sb/Te	3.1	3.1	3.1	3.1
Average initial jitter [%]	6.91	6.94	6.92	6.93
Jitter after second time recording [%]	7.11	7.17	7.12	7.14
Rise of jitter [%]	0.20	0.23	0.20	0.21
Durable reproduction power [mW]	0.38	0.38	0.38	0.38
Judgement		Y	Y	Y

Fig. 20

		Additive element		
	Sample No. 2-v11	Fe	Al	Si
Ge [%]	3.4	3.4	3.4	3.4
Sb [%]	72.3	71.5	71.5	71.5
Te [%]	23.3	23.0	23.0	23.0
Ti [%]	0.5	0.5	0.5	0.5
In [%]	0.5	0.5	0.5	0.5
Amount of additive element [%]	0.0	1.1	1.1	1.1
Sb/Te	3.1	3.1	3.1	3.1
Average initial jitter [%]	6.91	7.52	7.24	7.26
Jitter after second time recording [%]	7.11	7.98	7.67	7.68
Rise of jitter [%]	0.20	0.46	0.43	0.42
Durable reproduction power [mW]	0.38	0.38	0.38	0.38
Judgement		Y	Y	Y

Fig. 21

		Additive element		
	Sample No. 2-v11	Fe	Al	Si
Ge [%]	3.4	3.4	3.4	3.4
Sb [%]	72.3	71.4	71.4	71.4
Te [%]	23.3	23.0	23.0	23.0
Ti [%]	0.5	0.5	0.5	0.5
In [%]	0.5	0.5	0.5	0.5
Amount of additive element [%]	0.0	1.2	1.2	1.2
Sb/Te	3.1	3.1	3.1	3.1
Average initial jitter [%]	6.91	8.15	7.48	7.34
Jitter after second time recording [%]	7.11	8.87	8.14	8.04
Rise of jitter [%]	0.20	0.72	0.66	0.70
Durable reproduction power [mW]	0.38	0.38	0.38	0.38
Judgement		N	N	N

Fig. 22